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Society, education and Hartford.

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SOCIETY, EDUCATION AND HARTFORD

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SOCIETY, EDUCATION AND HARTFORD

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CHAPTER I

SOCIETY, EDUCATION AND HARTFORD

American society was founded upon democratic principles and it is the intention of all true and worthy Americans of today that these principles shall continue. Society has become extremely complex and its ideals, industry and economic status are continually changing. When we know that these changes are taking place there can be no doubt that changes in educational philosophies and procedures should be developed if education is to function satisfactorily in the society that fosters it.

The educational program that was in vogue in this country from two to three hundred years ago served its purpose quite well. Society of that day was so simple in comparison with our modern society that we have difficulty in even trying to picture in our minds the conditions under which these early colonists lived. The educational program which was satisfactory to their needs is obviously inadequate today but some of their avowed purposes are as pertinent today as they formerly were. The early statesmen and leaders of our country had very definite ideas as to the purposes of education and they proceeded to develop a program which would bring to them the desired results.

The plan advanced by Benjamin Franklin for his early academy indicates how seriously he was concerned with the health, vocational training and citizenship training for young people. Other statesmen and public spirited men likewise were concerned with, in many instances, the same things that we are interested in today, such as health, intelligent voting, the relation between ignorance and vice, the necessity of a person becoming self-supporting and the value of having something worth while to do when the day's work is done.

There have been a great many curriculum changes from early colonial days to the present time but the underlying emphasis still remains where it was in those early days and that is in preparation of young people to enter college.

George D. Strayer and others wrote in their "Survey of the Hartford, Connecticut Schools", in 1936 concerning the early American schools and their descendants as follows: "All over America today there is an insistent demand by the public for the reorganization of its secondary schools. Founded in 1636 in the form of the Boston Latin School, the early American Latin Grammar Schools exhibited all of the dominant characteristics of their ancestors the English secondary schools, sometimes called "academies" and more frequently referred to as "public schools", which to us means private schools.

The English School planted on American soil grew out of a social life characterized as a class society with a sharp dividing line between the socially preferred and the prosperous in material goods, such as land, ships and gold on the one hand and the workers on the other hand. The social life was relatively simple. The people earned their livings primarily by agriculture and life changed very slowly, sons following the occupations of their fathers on about the same level. Controlled by the few in their own interests, the school was to perpetuate this society by educating the few and keeping in ignorance the masses. The chief purpose of the early secondary school was to prepare for college. This is still the dominating purpose of secondary schools all over America as it is in Hartford."¹

The views of many of those people who are responsible for making decisions and establishing educational programs and procedures are quite conflicting. On the one hand they agree whole heartedly in the democratic principle of free educational opportunity for all while on the other hand they organize their educational programs with the primary thought in mind that only the schooling which has entrance to college as its goal is worthy of much consideration on their part. Among educators all over the United States today there are many who are so dominated by tradition

¹"The Hartford Public Schools in 1936-37". The Institute of Educational Research, Columbia University, New York. Survey Phamplet No. XIII P.25

that they will not break away from the old ways in spite of the fact that they are well aware of tremendous educational challenges.

Hartford is outstandingly noted for its conservatism and its inclination to follow the old traditions. The secondary schools of the city reflect this view point to a greater degree than do the primary and grammar schools. The city has three comprehensive high schools and they are well located to provide equal educational opportunities to all boys and girls in the city. In theory these three schools are identical in their offerings but in actual practice there are differences. The industrial arts program is an example. One of the schools has a four year program but it is quite narrow and limited. The other two schools are much more limited. Neither of them has any machine shop work and the only metal work offered at all is a course in art metal under the art department in one of the schools. Woodworking is scheduled for two complete years and for the last year or two one of the schools has given an opportunity to a limited number of pupils to take more work in wood. It must seem strange and illogical to many modern educators who are not familiar with Hartford and her traditions that the industrial arts curriculum should be so backward and undeveloped. A city as large as Hartford and as highly industrialized as it is should certainly provide a greater opportunity for young people to

become acquainted with aspects of the life that many of them will inevitably meet when they begin to take active parts as adult members of society.

Morton Snyder, Secretary of the Progressive Education Association, recently stated that as a result of investigation, it was found that the college requirements in most schools influence the administration to a compromise with educational ideals. When principals were asked what special group of pupils in their schools were most unfavorably affected by the present system their replies indicated definite trends. Four of these trends are as follows:

1. Artistically and mechanically gifted pupils are greatly handicapped.
2. Normal girls with non-academic minds have little chance.
3. Pupils with linguistic and mathematical disabilities are seriously affected.
4. Pupils not going to college have but little opportunity to develop along normal and natural lines.

Many recent studies show that a comparatively small percentage of boys and girls who complete a high school course of study continue their education in college. Appreciable numbers of those who enter college fail to graduate because of one reason or another.

The National Youth Administration conducted a survey of 25,000 unemployed high school graduates representing all sections of the United States. These graduates were

asked why they were most often turned down by employers. Large numbers reported that it was due to a lack of any practical experience and almost equally large numbers thought that their chances of gaining employment would have been much greater had they taken some so-called vocational courses in high school.

A short time ago Connecticut had 82,000 unemployed and at the same time its airplane, munition and general industrial factories were unable to find a sufficient number of skilled or even semi-skilled workers. Their search carried them throughout the country and still the workers could not be found. They finally resorted to short time intensive training schools to prepare young people with the required skills and information. These conditions are not peculiar to Connecticut in particular. It is impossible for boys or men either to step into industrial work without some previous training or experience.

There must be more serious consideration given to the problem of determining what education is to be given to young people to prepare them for the places in life that they must some day fill. Desirable social traits must be developed. Scientific research and industrial growth must be stimulated. Intellectual development is necessary. After these and many other fine sounding requisites are stated we ultimately come to the question of how can we best prepare young people to do the things that they will

need to do in the society in which they will have their existence.

Educational opportunity for all is an expression that is heard today the country over but it is still a challenge to educators and to society. Many progressive educators now believe that the theory of a college education for every one, if carried out, will not solve our difficult social and economic problems. In the first place this is impossible and in the second place it would not be a wise thing to do any way from a sociological point of view. Actually there are a great many young people who haven't the intellectual capacity to profit appreciably from, our understanding of, a college education. There are many others who, even though they have the capacity, are better suited to some other form of education and experience. It is becoming increasingly accepted today that the secondary school should extend and develop its curriculum to supply opportunities for boys and girls which will allow them chances to develop to satisfy their own needs and wants as well as those of society if we are to follow the democratic principles upon which this government was founded and has continued for many generations.

CHAPTER II

THE NATURE OF SOCIETY AND ITS EDUCATIONAL IMPLICATIONS

Our modern society is interdependent, associational and corporate in its structure and its functions but it is individualistic in its spirit and its ideology. The result of this disparity is the development of a conflict which has produced a feeling of insecurity by both the individual and by society. Educators must attempt to gain a proper perspective of the entire problem and provide curriculums which will be realistic and at the same time will be responsive to social needs.

The change from the agrarian society of the early days in this country to the industrialization of today has wrought great changes in educational opportunities and needs. The accepted opportunities for education through life itself have decreased with the shift of production from the home to the factory and with specialization.

Not so long ago the home was the scene of a diversified number of activities which children became familiar with as they grew up and through which they acquired much information and many skills. It was a realistic part of their education. An example of this is to be found in the farmer who had a flock of sheep. The boys of the family learned the thousand and one things necessary to know to breed, raise and care for these animals. At the proper

time they sheared them to get the wool. The girls and women of the family then began their part of this co-operative enterprise. They carded the wool, spun it into yarn, wove the cloth and finally made garments for members of the family. What a wide and practical education this was for these boys and girls. Contrast these experiences with those of boys and girls of today living in any urban district. There are few if any duties for today's young people within the boundaries of the home. They may be able to find a limited number of odd jobs outside of the home but these are usually jobs that do not contribute much to one's intellectual growth or social development. Woolen clothing for the family of today has a very different line of development from that just described for the rural family of the early days in this country. Sheep are raised in one part of the country; wool is shipped to some urban center where it is spun into yarn or thread by a specialized thread mill; the yarn is sent to another mill maybe in some other section of the country where it is woven into cloth and finally the cloth is shipped to a clothing or garment factory where it is made up for use. Each step has become a highly specialized and industrialized process. At best a worker may become trained to a high degree of skill in a very limited part of the complete process. This is a tremendous departure from the days when one family carried on all of the operations

from raising the sheep to making the clothing.

Over-specialization of recent years has encouraged people to know more and more of less and less. Education has been chiefly concerned with the acquisition of knowledge apart from action and criticism apart from creativity. Our modern machine civilization potentially capable of satisfying man's basic wants has evolved through quite a span of years but the prime purpose for which this civilization has developed has been lost sight of. In many ways the early individualism in this country was a very satisfying way of life. Life had a sort of social conscience then that seems to be lacking today. The economic side of life seems to have submerged some of the older and more common truly social and democratic aspects. Equal rights of opportunity, and freedom to achieve an abundant life were formerly sanctioned by society and by the government but today they are becoming merely trite expressions.

The individual who is simply allowed opportunity to employ freedom and initiative may find himself incapable of even obtaining an opportunity to work today. On the other hand we have the example of the individual who insists on being allowed his freedom and when he has it, he uses it to exploit his fellow men. Actually life is carried on today under conditions which are entirely different from those which were common to our ancestors. Qualities of conduct which were formerly in vogue can no

longer assert themselves. Material achievement has been divested of its human qualities and attributes. Stuart Chase says, "Specialized tasks are sundering the ancient trinity of work, play and art, and thus tending to upset an admirable and perhaps biologically necessary human¹ equation."

Our social problems seem to have outrun our social adjustments. Our conventional ways of doing things are frequently changed very suddenly without giving us a chance to adjust ourselves. Our basic attitudes and beliefs cannot escape the need of change in the ever forward march of technology. Increasing uncertainty caused by economic insecurity is facing people today more than ever before. The individual is increasingly fearful of the future for he is skeptical of his being able to secure the bare physical needs and comforts of life, especially in his late non-productive years. The solution to this problem is not at hand but certainly some attempt should be made to relieve this serious situation.

New ideologies and outlooks on life are indicated. Professor Walter J. Shepard suggests that the following "elements in a possibly new and dominant ideology" or "charter of liberties" are called for,

1. The right to creative work
2. The right to an adequate standard of living

¹ Stuart Chase, "Men and Machines" P.322

3. The right to collective participation
4. The right to economic security
5. The right to the best services that the sciences can give
6. The right to leisure and the means to enjoy it."¹

The corporate arrangements or machinery of society has become so complex and involved that there is need of stimulating the simple conditions of individual participation and control which will appreciably aid in the social stabilization of life. Objectives should be stated in simple terms of selected features of social participation instead of in terms of high sounding abstractions.

In education there can be no lasting or effective curriculum revision until a clear cut philosophy of education grows out of the confusion caused by the conflicting forces of society. Such a philosophy should embody an ideology which will give unity and a sense of direction to the collective experiences of the members of society.

In speaking of curriculum revision and its effects, Pickens E. Harris says, "We cannot assure sustained, fruitful participation unless we seize upon the going arts of life, at first simplified of course, as the substance and artery of the child's activity. For this is the medium in which curiosity and active participation thrive. It is the

¹ Walter J. Shepard, "American Political Science Review," Vol. XXIX February, 1935 P.124

medium in which the child is most at home. It is the supreme point of his social orientation."¹

Mr. Harris also says that the curriculum should lead to increased opportunity for individuals to participate more freely and intelligently in what they do. Industrial arts work provides exactly these opportunities.

¹Pickens E. Harris, "The Curriculum and the Cultural Change." P.88

CHAPTER III

THE LEARNING STIMULUS OF THE INDIVIDUAL

The individual is born free of instincts; he has capacities for development; he has no set pattern. These facts are given to us by the psychologists and we should keep them in mind at all times when we are considering educational programs or the learning processes and abilities of individuals. Individual development should be considered by educators through the activities and interests that are to produce this development. Social attitudes such as freedom, participation and sharing cannot be developed through the concepts of formal discipling, faculty psychology, development of sensory perception, or transfer of training. They can be developed through practical activity, self-motivation and guidance by flexible but sound principles. Classes in work in industrial arts provide the practical activity; they encourage the self-motivation; and they give constant guidance. Any boy in a wood-working class which is properly organized must share his experiences with others. As the project that he is working on develops through his own initiative, the guidance of the instructor and the cooperation of other members of the class, he enjoys the feelings of accomplishment and satisfaction. His freedom is restricted only by the safety and rights of

all that are in the room.

Physical activity has provided a very important stimulus for learning throughout all human life. This begins at earliest childhood as soon as movement is possible and continues to death. In early life this movement is quite free and uncontrolled but nevertheless it provides educational experiences. As life progresses and the nervous system matures activity becomes more specific and purposeful. Opportunities for these activities should be provided under guidance and supervision. In the child's early years these opportunities are found in the home but as the child reaches school age the school must begin to share this social obligation with the home.

When the infant flings his arms and kicks with his feet and legs it might seem quite meaningless and wasteful of energy to the casual observer but upon careful analysis and inspection it is found that these movements are producing definite development. A little later on the child begins to play with his toys; he builds block houses and knocks them down; he tries to take things apart and put them together again. In carrying on these activities he not only is developing his muscular and nervous systems but he is coordinating them. In early childhood interest or attention passes from one thing to another very rapidly but as the child develops his span of attention increases.

There is a natural tendency on the part of every

individual to investigate and manipulate material things that interest him. This characteristic is found to be more pronounced in some than in others but it provides one of the strongest motives for learning. Industrial arts takes advantage of this characteristic by providing opportunities for boys to investigate and manipulate. An example of this is the woodworking machinery in the wood shop. Almost any normal boy and a woodworking lathe in the same room would become acquainted very quickly. The boy would learn a great deal through the trial and error method. In a school shop under proper guidance and instruction he would learn much faster, better and with more safety.

Educational growth takes place best where there is purposeful activity and the individual learns most effectively in real life situations. An individual's capacities may develop in many ways depending upon his potentialities and his environment. Learning is an individual process. There are pupils in secondary schools today who have seldom if ever experienced the satisfaction of success in their school work. This condition has been recognized for many years but it still exists. Dr. Averill in his "Elements of Educational Psychology" written in 1924, recognized the circumstances that prevent these feelings of success. He said, "It is of little use, and may be of distinct harm, to educate a person in the intellectual sense, and in so doing permit his feelings either to slumber or actually to become soured by an educational process

which is colorless and neutral half the time and positively disagreeable the other half."¹

¹ Lawrence A. Averill, "Elements of Educational Psychology
P.47

CHAPTER IV

THE DEVELOPMENT OF DESIRABLE TRAITS AND HABITS

Socialization is one of the major objectives of our modern philosophy of education. This desired result may be achieved in at least two different ways. One way is through a cooperative effort with others while the other is through the manipulative experiences with materials in typical social or community experiences. Industrial arts is well suited to adapting individuals to desirable group associations. The nature of the work and the methods of presentation and organization are such that these results are practically assured.

It is becoming quite generally recognized that the fundamental purpose of secondary education is the preparation of young people to meet effectively the problems that arise from changing environments and changing social institutions. Industrial arts education provides settings for this accomplishment which are more natural and more effective than any other branch of the secondary school program because:

1. It provides opportunities to combine enjoyable and socially valuable motor activities with equally essential intellectual growth. The boy in wood shop who is making a butterfly table with turned legs enjoys a great amount

of motor activity. While he is actually doing the work he is learning much that becomes a part of his intellectual resources. He learns about the wood that he is working with;--its characteristics, where it comes from, how it is prepared for use, how it gets to the school shop, its value, how to figure the cost of the project and how best to finish the project. He also learns about the machine tools used on his job. He not only learns their names and what their particular functions are but he also learns how to operate them safely and effectively. These are but a few examples of how information is acquired through a combination of motor and intellectual activity.

2. It enables learners to grow in understanding and appreciation through doing, involving multi-sensory learnings. The student operating a band saw is learning not only the mechanics of the job but also many other things. He is learning how to distinguish between a safe and efficiently running saw and one that is dull, dangerous and poorly adjusted. He learns to distinguish the differences by the sounds of the machine, by the pressure needed to make the saw cut and by the weaving of the saw as it passes through the wood.
3. It presents topical challenging subject matter which is known to be drawn from present day life, whereas most book learning lags behind the latest developments. In a class in mechanical drawing recently in the school in which I teach a fine example of this condition was presented. The class was studying screw threads and a boy brought information to the class concerning a new type of thread that had recently been developed in a local aircraft factory. This thread is not described in any text or reference book available to the school because it is too recent a development.
4. It encourages the development of right mental attitudes toward all socially worth while work and stimulates desirable work habits. It discourages social snobbery. In properly conducted school shops boys soon learn that manual labor is not punishment inflicted upon those participating because they are socially inferior. Boys from the very poorest families and those from the well-to-do families meet and work together

in the best spirit of cooperation.

5. Education based on "practical" or "doing" projects is distinctly socializing because the whole setting is life-like, stimulating and energizing. The materials, tools and processes are representative of this industrial age and human relations connected therewith make for tolerance, consideration and open-mindedness.
6. Industrial arts education as an area of learning has much in common with adult life; it calls for applied knowledge, unified experiences and integrated personalities.

Something morally important happens to an individual, young or old, when his relationships to his work are such that he shares its purpose with others. Situations in the industrial arts are forever fostering these vital relationships.

The industrial arts shops provide a setting in which the action and thinking of the student is functional to a greater degree than any other part of the school program. Associations under conditions which depend upon cooperative effort, common cause, procedure and social interdependence are always objectives of class work in this field. A respect for the rights of others is constantly being developed through the every day sharing of tools, machines, materials and ideas. Responsibility for the care and orderliness of the shop rests on all. Self-discipline and self-control develop naturally.

CHAPTER V

FUNCTIONS OF THE INDUSTRIAL ARTS

A rich and comprehensive program of industrial arts education functions in parallel with the new aims of general education. It functions as follows: orientation in the complex, industrial, democratic society takes place in understanding the materials and the conditions upon which society is founded: culture is achieved in the sense of environmental mastery and in the understanding of the material cultures of that society: consumer knowledge is acquired in studying materials and products of industry: freedom is achieved in the sense of social participation: technical skills, knowledge and competence are acquired which promote recreational activity, worthy use of leisure time, hobbies and exploration, making the individual a more intelligent person to participate in the complexities of an industrial society.

A background in the trades and industries is acquired while skills are being developed. This background serves materially when the time comes for the student to select a vocation. The broad knowledge that students may gain in trades and industries tends to offset technological unemployment due to the fact that these young people, as they become employed, will be intelligent about several industries

rather than being trained for one narrow specific job. The workers will become more adaptable so that they may move from one line of work to another without passing through a long period of unemployment.

The student who is oriented to a society and who has adequate knowledge of its problems will be better able to participate in directing the course which that society will take. In this connection Prof. Harris says, "The narrowest and heretofore most menial activity, if it is positively useful to society, must be humanized by a genuine synthesis of that which is personally congenial and socially significant. In order to achieve these ends it is necessary that all education be informed first of all by the basic hypothesis that life is a great cooperative experiment where mutual serviceableness is not merely desirable but imperative, if each individual is to attain the highest quality of personal self-realization."¹

A study of the material cultures of the ages and a knowledge of past civilizations will serve to enlighten the student on contemporary problems. The boy who has studied the history of housing for the people of this earth from its earliest date to the present time will certainly have a broader and clearer conception of the needs and the means in the problem of housing today. The pupil who has studied the history, methods and problems of metal workers of the past

¹Pickens E. Harris, "The Curriculum and Cultural Change."
P. 67

will have a more comprehensive and sympathetic understanding of the problems in the metal trades today.

Desirable social traits and attitudes are developed through sharing and participating in the shops and laboratories for these learning situations. A boy in industrial arts work whether it be woodworking, printing, metalworking or any other of the branches, learns to cooperate with and to be tolerant of others. The free and close associations in these classes makes adjustment necessary for these boys if they are to continue in the work. If an individual wishes to use a milling machine in a metal shop he must await his turn regardless of his social, economic or scholastic standing. He learns to clean up the machine he has just used and to take care of tools and materials when he has finished with them. He has no slaves or servants in these shops. He is taught by example and by inference at least to be prompt in meeting his class obligations and to be industrious.

Leadership is given its chance to develop through systems of delegated responsibility, through research and through acting as members of class room staffs or organizations, such as foremen, time keepers, tool room men, safety foremen, etc.

The development of these social traits and attitudes is highly desirable and one might say compulsory if our democratic society is to continue. What more natural and

effective situations for developing these could be found for large numbers of boys, at least, than the school shops or laboratories.

Our modern society being fundamentally industrial must provide an adequate education for our youth that takes cognizance of industrial arts which becomes such an important factor in producing the type of education which will satisfy this socio-industrial philosophy.

Industrial arts provides means for self-expression that is not limited by age, sex, race, intelligence or aptitude. Boys and girls, men and women, the bright and the dull, those with a great amount of technical ability and those with a small amount all find chances to express themselves, according to their potentialities in this field of expression and development. The values obtained from this phase of education are not limited to persons pursuing definite occupational interests. The broadening influences brought about through this work are of unquestioned value in the understanding of our industrial civilization. Any occupational interest must be concerned with social and economic as well as material factors. The boy who is interested in drafting as an occupation not only must have a good foundation in mathematics, physics and mechanical drawing, but he should understand other vital considerations. He should understand the physical requirements of the work, what pay draftsmen receive, how stable the work is, what the

chances for advancement are and many other equally important qualifications. There is unquestionably no better place to give a boy this information than right in his classes in mechanical drawing. It is a definite function of the instruction.

Exploratory orientation is provided through offerings in this field. Through this orientation work a boy may become intensely interested in some phase of the work and from it he may proceed to prepare himself as a specialist in it. Had he not been given the opportunity to explore he may never have found his chief object of vocational interest and success.

The material cultures of our society are so important in this technological age that man should be prepared to enjoy them by having had educational experiences which orient and point the way for him. The material inheritance is an important part of man's general heritage of the past and he should make use of and enjoy it. Modern man comes in contact with an ever increasing number and variety of material things. The modern home of today contains more material things than has the home at any previous period in the history of the world. It is important that the owners of these homes should know something about these things besides simply being able to recognize them. Industrial arts is not a cure-all. It cannot do everything but if given an opportunity it can make a great contribution to the individual and to society.

Schools need to interpret the ever increasing number of significant changes that are pressing society for consideration. It would be difficult to justify a school shop that devotes its time, energy and resources to the making of projects for the sake of the finished piece alone. The piece itself is of little value but what the making of that piece, under proper guidance and supervision, may do to the individual is of great importance. A broad and comprehensive program of industrial arts is definitely called for. Such a program will serve in making life richer and more interesting to the end that the individual will become a better citizen and enjoy a more wholesome and abundant living in a democratic and industrial society.

CHAPTER VI

PRESENT DAY TRENDS IN INDUSTRIAL ARTS

Industrial arts is accepted today as an integral part of any well rounded comprehensive secondary school program. There is a very good chance that some courses will be offered in almost any comprehensive high school even if they are quite meager and limited. The general trend today is to consider industrial arts as a field similar to social sciences, languages, and music and not as a subject such as arithmetic, spelling or woodworking. It has come to mean a broad program concerned with socialistic, idealistic, materialistic and economic knowledge.

The fundamental objectives of industrial arts education are effective for all levels of the work. There have been in the past and there still are today those who maintain that industrial arts in secondary schools should provide specific training for some pre-determined immediate vocation. The consensus of opinion at the present time, among leaders in the field as well as leaders in general education, is that industrial arts subjects should be offered primarily for their general educational value. It is conceded that these courses must present to students practical values related to occupational life if the interest of the students is to be kept at a high level, but that they should not be offered or conducted

on the promise or expectation of the students that they are being specifically trained for some particular vocation. That function should be left to the trade and vocational schools whose specific duty it is to do exactly that work.

A list of courses or subjects that might be offered under industrial arts would be quite formidable. Prof. William E. Warner of Ohio State University at Columbus, Ohio, who has made extensive study in this direction, indicates that there is scarcely an offering that could be made in our schools which would not involve industrial arts in some way. In various schools throughout the country there appears a wide range of individual subject courses listed under this head. They run all the way from the traditional wood shop to ceramics, art metal, jewelry, commercial art and plastics. Woodworking is the old stand-by and to many people industrial arts and woodworking are synonymous. Probably nearly every secondary school in the country, that has an industrial arts program, offers woodworking and in many school systems it continues to dominate the whole program on the basis of tradition.

Experienced curriculum builders advocate a general survey of the industries of a community to be served before a program of industrial arts is organized. The survey should show the part that each industry plays in the community and on the basis of this, the more important ones should be selected as basic for the school program in this field. It would

be impossible to represent every industry in a large city in such a program because of the prohibitive cost and the limitation of time. Even though the industrial arts subjects chosen are to be pre-vocational rather than vocational in their method of treatment, it is good judgment for the school to present offerings which are representative of local industries in so far as possible. It must be remembered that the main objective is to impart general educational information and to provide opportunities for students to acquire general knowledge and to receive general training.

If recent publications can be relied upon, industrial arts is on a definite upward swing. The state teacher training institutions that are preparing industrial arts teachers are planning on a greatly expanded program all over the country. They no longer maintain that a knowledge of wood-working and mechanical drawing is sufficient for a teacher in this field.

Pre-vocational orientation is one of the outstanding aims of industrial arts, as has been spoken of before. It is to the advantage of the community to have each individual employed in the type of work in which his time and effort will be spent most effectively. The industrial arts program is obligated to assist in helping students find the occupations for which they are best suited and in which they will receive the greatest enjoyment and satisfaction.

There is no place in the school experience of the average

boy where the teacher-pupil relation is as real as it is in the industrial arts classes. This provides an opportunity for the soundest kind of guidance but in the past this opportunity has been practically ignored from an official administrative point of view. If guidance is educational, then it is as much a part of industrial arts as it is of vocational guidance. There is a perfectly natural tendency for reticent and self-conscious adolescents to seek aid and advice from the person or persons who give them a medium of expression that is pleasing to them.

The intelligent choices of occupations which entail possible pre-vocational training periods are almost entirely matters for the senior high school level of education. If students are to choose their life work as a result of school experiences, then sufficient care should be given to specific details concerned with vocational futures. Industrial arts does not have as its function the teaching of actual trade work but it should provide a valuable guiding and preparatory influence. Specialized vocational choices should be made by pupils upon the basis of constant employment, reasonable advancement, wages high enough to insure good living, and a pleasing type of work for the individual. When students have made choices in regard to their vocational futures, the industrial arts department of the school should render valuable and effective service in placing these students in vocational or trade training schools or in factories where apprenticeship

training may be had.

We in industrial arts ask ourselves over and over again whether or not we are on the right track and whether or not we have the right goal in view. As has been previously mentioned, industrial arts has gone through many stages or steps and each one brings us nearer to a liberal education. The question quite frequently comes up as to whether industrial arts as a field is really a fundamental of modern education. I have made statements in this paper to the effect that it is quite generally recognized as such today. Dr. Bess Goodykuns of the United States Office of Education has answered the question as follows, "This is essentially an industrial age, modern civilization is dependent largely upon science, invention and skill. The manufacturing industries are important among activities which make for the material well being of the people. They should be exemplified in the facilities provided by public education. The general education of every school pupil--his cultural development--is incomplete without concepts, understandings and appreciations regarding manufacturing and its host of workers. Industrial arts as an educational field makes the desired contribution to the pupils development. It concerns itself with the aesthetic and economic value of materials with basic processes of manufacture and with many problems of the worker."¹

¹Dr. Bess Goodykuns, "Industrial Arts. Its Interpolation in American High Schools"

Some educators seem to feel that education has reached an impasse and that it is time to choose a completely new course. Industrial arts need have no worry along this line if it will keep abreast of the needs of the times.

We have heard many times the old saying, "There is nothing new under the sun," and that is quite true in education. Modern leaders in educational philosophy appear with what they term "new ideas" but these may consistently be traced back to an earlier date. John Dewey stressed the fact that "we learn by doing", but Plato, Rousseau, Pestalozzie and Froebel were many years ahead of him with the same idea.

The industrial arts purpose carries out the progressive educational ideas and provides an effective background for vocational education and it is most significant in education for living. Some people have become confused in their ideas relative to the "New Curriculum". In this confusion they are inclined to forget the true purposes of education. Education must systematically train the moral and intellectual faculties and embrace a preparation to live successfully and happily in the society of today. Abraham Flexner describes education as an intellectual and spiritual process which "has to do with opening the windows of the human mind and the human soul. It involves the effort to understand, to comprehend, to be sensitive to ideas, aspirations and interests to which the individual might otherwise be indifferent."

A factor that has had a tremendous influence on education in recent years has been the phenomenal population growth with its attendant problems. In 1890 the population of the United States was about 63,000,000, whereas in 1935 it had increased to approximately 128,000,000. In 1890 the high school enrollment for the country was about 200,000, while in 1935 it had increased to over 6,000,000.

Surely these figures are significant and they imply much in relation to present day educational needs. Maris M. Proffitt wrote in a magazine article, "In 1890 high school students were a selected group, taking a college preparatory course. Today they are the sons and daughters, not only of the professional classes, but also the butcher, the baker, the electric light maker and of parents in scattered areas of agriculture and mining. Of the boys and girls of our nation of high school age, 66 per cent are enrolled in high school. In view of these facts, certainly no argument is needed to convince one that an academic program, preparatory for college will not serve the needs of all pupils included in the heterogenous group now found in our American high schools."¹

Our chief concern now is to consider the influences which will be factors in determining the type of education which we wish in the future and our duty in regard to it.

¹Maris M. Proffitt, "Industrial Arts an Essential in the Curriculum of American Schools" P. 231

This is an industrial age. The tools, materials and processes of industry bring a new field of experience into the school program. The great field of information opened up to students of industrial arts is extremely worth while and it is doubtful if any other educational area has as much to offer to the average individual. The advance in science and invention has raised havoc with our economic world and knowledge must be forthcoming to straighten out the disorder. Some of these new products of science and invention which have changed our way of life are the telephone, the automobile, the aeroplane, the radio, and moving pictures. Change in our manner and mode of living is brought about so rapidly through these new developments that industrial education administrators should hesitate to commit boys to a field of apprenticeship training that may be eliminated almost at once by some new invention. With whole industries being wiped out and new ones coming in at a rapid pace, we face conditions in education that can most effectively be taken care of through industrial arts.

Not many years ago the manufacture of buggies, wagons, and carriages was a big business in this country. Today it is almost entirely replaced by the manufacture of automobiles and aeroplanes. In Westfield, Massachusetts, and its neighboring communities the manufacture of horse whips was a large and highly specialized business a short time ago. Today the need is gone. The blacksmith who was indispensable to any

community a short time ago has just about disappeared. He is no longer needed since production methods of manufacturing have come in and people are able to buy replacement parts from the local store which formerly were made by the blacksmith, or the old part was repaired by him. The highly skilled trade of the cobbler has been superseded by modern production shoe factories. What has become of the manufacturer and peddler of tin ware that used to go from house to house selling his wares? He, too, has been pushed out by modern production. These are but a few of the examples that could be given but it should be noted that in each case these men had been trained over long periods of time until they had developed a high degree of skill. Suddenly the only work that they knew anything about was outmoded. A broader general training in the industrial arts will go a long way toward preparing people for similar situations.

Trade training is not called for in a majority of the cases of high school boys or others of high school age. They will enter industry as workers in the various lines and some may become foremen, superintendents, managers or even owners and operators of the business.

Another trend that is having an important effect on the educational program is the geographical population shift that has been taking place. People are not following Horace

Greeley's advice to "go west" as they did at one period in our history. People from the poverty stricken areas of the "cotton belt", the "dust bowl", and "below the Ohio River" are moving north and east to the larger urban centers. These shifts are reflected in the social and economic status of the areas affected. Certainly their educational requirements will be changed. Hartford has acquired quite a good sized negro population in recent years. During the World War, help for the cultivation and care of tobacco was scarce and hard to get. Some of the larger plantation owners brought negroes from the south to do this work so that a nucleus of these people was formed. It grew very rapidly until today the negro population of Hartford is large enough to offer serious economic and social problems.

CHAPTER VII

WHY HARTFORD SHOULD BE CONCERNED ABOUT A DIVERSIFIED AND EXPANDED PROGRAM OF INDUSTRIAL ARTS

The official census of the United States Government in 1930 showed that 52,236 males were gainfully employed in the city of Hartford. 23,903 or 45.9 per cent of all of the males employed were working in the manufacturing and mechanical industries and in those professions of a mechanical and industrial nature. Since 1930 that number and percentage has increased rapidly due to the industrial expansion which Hartford has had.

It is reasonable to assume from the above facts that at least fifty out of every hundred boys who left our schools, whether by the drop-out method or by graduation, should have been prepared to face the prospects of earning their livelihoods in mechanical and industrial lines. It has been estimated by the Manufacturers' Association of Hartford that at least sixty per cent of the boys of the city during normal times should receive training which would facilitate their earning their livings in these fields.

Hartford has a shortage of mechanically skilled labor and at the same time, according to recent figures compiled by the city, there are more than two thousand youths that are out of school and unemployed. (August, 1940) Eighty-five

to ninety per cent of all of the boys that enter the Hartford High Schools do not go to college. In spite of this fact the high schools are fundamentally set up for preparation for college.

Dr. M. R. Trabue, director of the division of education of the University of North Carolina, speaking at a "Career Conference for High School Graduates" at Rockefeller Center, New York, a short time ago said, "Instead of facing the facts as to the kinds of work actually to be done in the world, the schools are instilling professional ambitions that only a few can achieve, extravagant tastes that relatively few can satisfy and expensive interests that few can ever afford to follow." "The 'higher walks of life', for example, is a phrase used constantly in the schools to refer to the academic professions. The shock that comes to young people, when they leave school and discover that modern employers want skill of the sort their teachers tried to prevent them from gaining, is very likely to make them somewhat cynical." Dr. Trabue's statements are particularly pertinent and even pointed here in Hartford.

At any one time there are only a certain number of positions in any one occupation that are open to our youth. This number is controlled by business and industrial trends rather than by the schools and their curriculums. The type of vocations represented in a community and the numbers engaged in them set an aim and a limit for those boys who wish

to remain in the community. Any program of education in our schools must be ready to offer training and educational opportunities for every child enrolled if it is to be recognized as part of a democratic scheme of education. It is not sufficient that educators should take the smug attitude that the program is perfect and that pupils could take it as it is or leave it,--that is, drop out of school.

In a recent issue of the Hartford Times under an article, "Learning to Make a Living", the following is quoted, "The State Board of Education believes that education from the ages of twelve to eighteen should include vocational training. It is the belief of the board that every student leaving Connecticut's high schools should be provided with some knowledge or skill that will make him eligible for employment in some economic activity. Certain facts, the board says, must be considered in making changes in the present procedures:

1. Most boys in Connecticut will be employed in industrial, or tool and machine using occupations
2. The age of initial employment is rising and at the present time business and industry do not willingly employ workers under eighteen years of age.

The recent experience of the State Department of Education in administering the Defense Training Program has shown that the schools have not provided training for the demands of modern industrial society. Too few have been made competent to take places in industry and far too many have been

trained for jobs that do not exist."

The article goes on to say that the industrial arts program, as generally set up, has been too limited in its scope. It maintains that the programs should be extended to include as many fields and activities as local resources and interests will allow. It suggests or recommends wood-working, metal working, textile working, leather working, graphic arts, plastic arts, automotive and electrical work.

The December 5 issue of the Hartford Courant carried an article in which it said that a new state grant of over \$100,000 will be asked of the 1941 legislature by the State Board of Education to aid communities in establishing high school programs in the industrial arts and homemaking.

The Hartford high schools should be eager to supply educational opportunities which are consistent with the needs of the boys and girls of the city. Evidence has been given which shows that this is not being done at the present time. It is essential for the welfare of all that the school program be changed to best meet the needs of the people in a real and practical way.

CHAPTER VIII

THE PRESENT INDUSTRIAL ARTS PROGRAM FOR THE HARTFORD HIGH SCHOOLS AND RECOMMENDATIONS FOR EXPANSION

The present industrial arts program for the high schools of Hartford is inadequate to meet the needs of boys who are eventually to become employed in the industries of the city and who are to participate in its ever changing society. It falls short of accomplishing the functions of secondary education as previously described. The program is much too narrow in its scope. It fails to offer orientation in several branches of industry that are vital to Hartford. The lack of space and facilities limits not only the extent of the experiences offered but also the number of pupils that can benefit by them. The work being offered at the present time tends too much toward the development of skills at the expense of a wider pre-vocational experience covering the technical, social, economic, and historical aspects of the work.

The present curriculum in industrial arts in the high schools is as follows:

NINTH GRADE

SUBJECT	PERIODS	CREDITS
English	5	4
Algebra or General Mathematics	5	4
Woodworking and Mechanical Drawing	10	4
One Elective	5	4

TENTH GRADE

SUBJECT	PERIODS	CREDITS
English	5	4
Woodworking and Mechanical Drawing	10	4
Two Electives	10	8

ELEVENTH GRADE

SUBJECT	PERIODS	CREDITS
English	5	4
American History and Government	5	4
Woodworking and Mechanical Drawing	10	4
One Elective	5	4

TWELFTH GRADE

SUBJECT	PERIODS	CREDITS
English	5	4
*Woodworking and Mechanical Drawing	10	4
Two Electives	10	8

*In the Hartford Public High School where they have two machine shops the industrial arts curriculum is as follows:

Tenth Grade Machine Shop and Mechanical Drawing

Eleventh Grade

 First Half Year

 Woodworking and Mechanical Drawing

 Second Half Year

 Machine Shop and Mechanical Drawing

Twelfth Grade

 Machine Shop and Mechanical Drawing

The content of the specific industrial arts subjects is quite rigid and specialized as shown by the following:

NINTH GRADE

Mechanical Drawing

Use of instruments and materials
Geometrical construction
Working drawings
Orthographic projection

Woodworking

Bench work using the common hand tools on simple projects
Woodturning between centers
Face plate turning
Elementary pattern making

TENTH GRADE

Mechanical Drawing

Revolutions of plain and solid figures
Development of surfaces
Intersections of prisms and cylinders

Woodworking

Elementary cabinet making

ELEVENTH GRADE

Mechanical Drawing

Screw threads
Machine Fastenings
Shade lines
Detail drawing
Assembly drawing

Woodworking

Cabinet making

TWELFTH GRADE

Mechanical Drawing

Mechanical motions

Cams

Gears

Woodworking

Cabinet making

The machine shop practice that is offered in the one high school is the straight traditional machine work. It starts with bench work in the use of hand tools and elementary principles and finishes in the twelfth grade with specialized technical work on such machines as milling machines and grinders.

Industrial arts, as a part of the educational program of the school, is the study of the tools, materials, processes, products, methods, and the problems of industry and industrial society. It should be studied not only through the planning and construction of articles of interest to pupils but also through reading, discussion, and observation. It should be organized for the purposes of providing general educational, exploratory, and guidance values. An understanding of our industrial arts heritage and modern industrial conditions should grow out of the pursuit of this work. It should not be planned as a vocational or trade preparatory field of endeavor. Opportunity for creative work, the development of leisure time activities, understanding of consumer values, and society's organizations

should be promoted.

It is quite inconceivable that any program of studies could be such that it would offer experiences in every single aspect of our existence. Educational costs are constantly increasing and tax payers associations are becoming more and more hostile toward what they term "this terrible tax burden". While taxpayers and the public in general must be prepared for, and reconciled to, increasing educational costs, educators must use discretion and must not attempt to force the issue too rapidly. In planning and organizing school programs, choices have to be made and good judgment combined with clear understanding are essential in making these decisions.

A study of the Hartford situation at the present time indicates conclusively that any changes in educational curriculums that might be made must be achieved at a minimum of increased expense to the city. Changes also must be based on sound educational philosophy in order that they may receive serious consideration.

With these points in mind it is recommended that a new program of industrial arts for the high schools of Hartford be adopted. Under this new program the complete offerings in the field will be made under four general areas or divisions to be specified as follows:

1. General Wood
2. General Metal
3. Graphic Arts
4. Drawing and Planning

These four general areas or divisions are to be organized so that experiences may be given to pupils in many typical occupations. The list follows:

1. General Wood

- a. Benchwork, use of hand tools
- b. Cabinet making
- c. Pattern making
- d. Glazing
- e. Upholstering
- f. Wood finishing
- g. Wood carving
- h. Elements of carpentry

2. General Metal

- a. Soft metal casting
- b. Sheet metal work
- c. Art metal work
- d. Ornamental iron work
- e. Forging
- f. Welding
- g. Machine shop work

3. Graphic Arts

- a. Reproduction processes
- b. Plate making (Engraving)
- c. Paper making
- d. Ink making
- e. Binding
- f. Rubber stamp making

4. Drawing and Planning

- a. Mechanical drawing
- b. Sheet metal developments
- c. Machine drawing
- d. Piping practices and arrangements
- e. Electrical work
- f. Isometrics
- g. Mechanical perspective
- h. Furniture planning and designing
- i. Topographical layouts

It will be noted that in each of these general areas the experiences to be offered to students are similar either

through the alliance generally found in industry or of the equipment employed.

Each boy in the industrial arts curriculum must spend a half year in each of the four general areas during his ninth and tenth years, while in his eleventh and twelfth years he may specialize in the area or areas of his choice.

THE NEW INDUSTRIAL ARTS PROGRAM

NINTH GRADE

SUBJECT	PERIODS	CREDITS
English	5	4
Applied or General Mathematics	5	4
General Wood Shop (first half year)	10	2
General Metal Shop (second " ")	10	2
General Science or Social Studies	5	4

TENTH GRADE

SUBJECT	PERIODS	CREDITS
English	5	4
Graphic Arts (first half year)	10	2
General Drawing and Planning (second half year)	10	2
General Science or Social Studies	5	4
An elective	5	4

ELEVENTH GRADE

SUBJECT	PERIODS	CREDITS
English	5	4
One of the general areas of industrial arts	10	4
American History	5	4
An elective	5	4

TWELFTH GRADE

SUBJECT	PERIODS	CREDITS
English	5	4
One of the industrial areas	10	4
American Democracy	5	4
An elective	5	4

Methods for Conducting the New
and Expanded Program

The new set-up for the industrial arts shops must be developed in such manner that the richest and most stimulating environmental conditions will be presented to the students. Boys will be encouraged to wander into the shops and to study the development of various projects and processes. The shops must be arranged and maintained in a manner which will be attractive to the casual observer as well as to members of the classes. Charts picturing and listing information of a related nature should be used extensively on the walls and bulletin boards. Project displays on shelves and in cabinets should be used to stimulate interest and understanding.

All groups and societies develop some form of personnel organizations for the operation and management of the group. Such organizations require not only leaders to direct the way but also followers who learn to cooperate in the achievement of desired objectives. All types and classes of people have organizations of one kind or another. It is important that young people should gain useful experience through such

groups. It is conceded today that the school teacher of the past was too much of a dictator. Pupils should be given actual opportunities to develop traits of leadership and not simply to be told of them by some guidance administrator.

The new industrial arts program recognizes this situation and provides opportunities for personnel management by the pupils under the advice and guidance (not domination) of the instructor. Pupils will secure social exploratory experiences whether they act as shop foreman, superintendent, safety engineer, personnel manager or worker at one time or another. Those who issue orders must learn to see that they are carried out and those who receive the orders must learn to follow them. The teacher in turn is relieved from some of his administrative duties and he has more time to devote to his most important function, that is, to teach.

Each shop should have a library and planning center located in some convenient and attractive position in the room. This library should be the immediate source of information and plans necessary for the best procedures in the shop. A large table on which students may study and plan their work is necessary. Books and magazines should be conveniently indexed and located near the study and planning table. A clipping and letter file would also prove of great value and interest. The whole shop atmosphere should be made as attractive and cheerful as possible in order that students will naturally turn to this center to enjoy themselves

and satisfy curiosities that they normally have.

A, so-called, teaching center should not be overlooked in planning and arranging the shop lay-out. Some convenient place in the room must be provided for the seating of the class while the teacher is giving demonstrations or conducting discussions.

The size of the class should never exceed the number of work stations in the shop. If the work is well planned and organized, a class of twenty may be cared for effectively. If the number of students assigned to a class is greater than twenty, the teacher's time is not sufficient to devote enough to each pupil. Either some pupils fail to receive any of the teacher's time or all of them receive a little less than they should.

Double periods should be available to classes in shop-work because with single periods too great a percentage of the allotted class time is necessary in getting out tools and equipment at the beginning of the period and returning them at the end of the period.

Units of work in the four general areas must be organized for exploratory and orientation purposes in each of the classifications. Under General Wood there will be a unit job for benchwork, one for cabinet work, one for pattern making, etc. Under this organization every boy will receive a wide range of experiences and thereby he will be able to more intelligently determine his vocational interests.

The use to which the time of the class period is put is an important consideration. Teachers who follow no scheme or schedule may spend too much time talking or demonstrating to the class and allow too little time to the actual manipulative work of the class. Generally speaking, about 75 per cent of the class time should be devoted to actual work and construction and the other 25 per cent should be devoted to demonstrations, related information, and discussions. This 25 per cent should be divided approximately as follows:

1. General information	3	per cent
2. Occupational information	3	" "
3. Safety information	1	" "
4. Science and mathematics	3	" "
5. Consumer values	3	" "
6. Economic and social influences	3	" "
7. Demonstrations and directions	9	" "

Several lesson topics under each of these main headings should be developed which would take about twenty minutes of a period to discuss. The following are examples of such lesson topics.

1. General information

- A. Design: Structural and esthetic principles involved.
Example: Furniture styles.
- B. Interpretation of drawings and information.
Example: Reading a drawing and studying the specifications for the construction of a flat top knee hole desk.
- C. Shop sketches
Example: Free hand sketch of a book case.

2. Occupational information

Example: Description of occupations in a machine shop.

3. Safety information

Example: Precautions to be observed while one is operating a circular saw.

4. Science and mathematics

Example: (1) Principles involved in the use of pulleys and belts on shop machine tools.

(2) Figuring board measure.

5. Consumer values. Products being manufactured in the industry which is being studied.

Example: Choosing an automobile and the care of one.

6. Economic and social values

Industry: Value of time, labor, materials and its products.

Example: Elements of cost that enter into the price of a washing machine.

. Geography of products, materials and transportation

Example: Sources of materials used in the building of a washing machine.

7. Demonstrations: Lessons and demonstrations on the use of tools and materials needed for some particular work.

Example: The names of the various kinds of planes with their important parts and how they are best adjusted and used.

In a recent talk to the Hartford Lions Club, Superintendent of Schools, Fred D. Wish, Jr., said that the city's public schools are endeavoring to follow an ideal education program. He said that the city provides schools anticipating

that education will assist the pupils in acquiring health, a happy emotional life, moral standards and stamina, the necessary skills, and that body of information necessary to make him a valuable citizen and a success.

I believe that the new program for industrial arts in the high schools of the city which I have just recommended will bring the schools of Hartford one step nearer toward that ideal educational program that Supt. Wish so recently expressed before the Lions Club.

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